DOCUMENT RESUME

ED 179 305 PS 011 044

AUTHOR Lingle, Kathleen M.; Lingle, John H.
TITLE Effects of Selected Object Characteristics on Object Permanence Test Performance.
PUB DATE 78
NOTE 14p.; Parts of this paper were presented at the Biennial Meeting of the Society for Research in Child Development (San Francisco, CA, March 15-18, 1978)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Age Differences; *Attachment Behavior; Examiners; *Infant Behavior; *Infants; *Motivation; Parent Child Relationship; Performance
IDENTIFIERS *Object Permanence; Search Behavior

ABSTRACT

A study was conducted to investigate the degree to which both object familiarity and motivational factors influence infants' search behavior in an object permanence test. Infants' search behavior for an unfamiliar test object was compared with search behavior for (a) an experientially familiar object that each infant had played with daily for a week and (b) an attached object, such as a bottle, which the mother reported comforted the infant in times of stress. Thirty-six infants (15 males and 21 females) between 8 and 13 months of age were tested in three experimental conditions: unfamiliar object condition, familiar/object condition, and attached object condition. The Uzgiris-Hunt scale of object permanence was used to assess substages in the development of object permanence. Comparison between subjects' scores in the unfamiliar and familiar object conditions provided no evidence that object familiarity alone influenced test performance. Whether or not the infants' search behavior significantly increased for attached objects depended on which of two examiners administered the object permanence test. It is concluded that the results are best explained by motivational factors and that this has important implications for object permanence testing. (Author/MP)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED179305

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

Effects of Selected Object Characteristics on Object Permanence Test Performance

Kathleen M. Lingle
Educational Testing Service

John H. Lingle
Livingston College-
Rutgers University

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Kathleen M. Lingle
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

PS 01044

Running head: Object Permanence

Parts of this paper were presented at the meeting of the Society for Research in Child Development, San Francisco, March 1978. Its preparation was supported in part by a Rutgers University Research Council Grant to the second author and is based on a master's thesis completed by the first author under the supervision of Ellen Hock at Ohio State University. The authors wish to thank Irving Sigel, Juliet Vogel, and Ann McGillicuddy-DeLisi for their helpful comments on an early draft of the paper. Reprint requests should be addressed to: Kathleen M. Lingle, Educational Testing Service, Princeton, New Jersey, 08541.

Abstract

Studies of whether an infant's concept of object permanence develops at different rates for different objects have generally confounded the familiarity and motivational properties of test objects. To separate these factors, infants' search behavior for an unfamiliar control object was compared with that for (a) a familiar object and (b) an "attached" object reported to confort the infant in times of stress. As compared to unfamiliar objects, no increase in search behavior was found for familiar objects. Whether or not it significantly increased for attached objects depended on which of two examiners administered the object permanence test. It is concluded that the results are best explained by motivational factors and that this has important implications for object permanence testing.

Effects of Selected Object Characteristics on Object Permanence Test Performance

An issue of continuing research interest is the degree to which the infant's concept of object permanence develops at different rates for different objects. Early research by Bell (1970) and others (cf., Lamb, 1973) indicated that person permanence develops prior to object permanence. More recent work by Jackson, Campos, & Fischer (1978), however, suggests that this apparent object-related decalage may result from persons and objects being hidden differently. Nevertheless, even when hiding procedures were carefully controlled, Jackson et al. (1978) found slight increases in object permanence test scores for familiar as opposed to unfamiliar objects (Study 1) and for persons as opposed to inanimate objects (Study 2).

The source of such object-related performance differences remains obscure partly because in past studies subjects' experiential familiarity with test objects has been confounded with the motivational properties of the objects. That is, in an unfamiliar testing situation one might expect a parent, as compared with an inanimate object, to be both more familiar and more motivationally alluring to a child. Similarly, the familiar inanimate objects used by Jackson et al. (1978) for which higher permanence scores were reported appear to have included both familiar as well as "attached" objects (i.e., an object, such as a bottle or a favorite toy, which the infant

associates with the alleviation of stress and is therefore likely to elicit highly motivated search behavior).

To investigate the degree to which both object familiarity and motivational factors influence search behavior in an object permanence test, a study was conducted in which infants' search behavior for an unfamiliar test object was compared with search behavior for (a) an experientially familiar object that each infant had played with daily for a week and (b) an attached object, such as a bottle, which the mother reported comforted the infant in times of stress. To the degree that experience with an object improves performance in object permanence testing, subjects were expected to perform better when tested with both the familiar and attached objects (as compared with an unfamiliar control object); to the degree that motivational factors account for object-related performance differences, subjects were expected to perform better only when tested with an attached object.

Subjects were 36 infants (15 males and 21 females) between 8 and 13 months of age. They were recruited from patients scheduled for routine well-baby check-ups at the Ambulatory Pediatrics Unit of a large state university hospital clinic. All subjects were the product of a normal pregnancy and birth. During an intial phone interview with the subjects' mothers, all infants were identified to have an "attached" object. This was described to the parent as, "an object that the infant cries for

or actively seeks out during times of stress and that perceptably calms the child."

A between-subjects design was used with subjects being randomly assigned to the experimental conditions. In order to be able to generalize any results to different ages and testing conditions, subjects were blocked into two age groups (8 mos. 7 days to 10 mos. 15 days and 10 mos. 16 days to 12 mos. 24 days) and two different examiners were used in testing. One examiner was the first author while the other was a trained research assistant, unfamiliar with the research goals or hypotheses. Thus, the complete design was a 3 (test object) x 2 (age level) x 2 (examiner) factorial design.

In the unfamiliar object control condition subjects were tested using a small red cube approximately 2.5 cm in size which the infant had not seen prior to testing. In the familiar object condition subjects were tested using a small, plastic toy mouse. The mouse was delivered to the infant one week prior to testing and the mother was asked to present the toy to the child each day up to the time of her clinic appointment. All mothers reported that they had complied with these instructions. In the attached object condition subjects were tested with an object from the infant's own belongings that the mother identified as an attached object. For approximately two thirds of the subjects this was the child's bottle, while for the rest it was some other small object such as a cup, rattle, or pacifier.

The Uzgiris-Hunt scale of Object Permanence (Uzgiris & Hunt, 1974) was used in testing. This scale consists of 15 tasks ordered to assess substages in the development of object permanence. Objects are hidden under a series of felt covers approximately 38 cm by 41 cm. The hiding procedures become more complex as the test progressively assesses higher levels of object concept. Because they were of approximately equal size, all objects used in the research could be hidden in an identical manner.

Subjects were tested with their mothers present. For a trial to be scored a pass, a child had to uncover and grasp the object from its hiding place on two successive trials. Testing was terminated when any two items were failed in succession or an infant became too fussy or disinterested to continue. Each infant's performance was independently scored by two observers. Inter-scorer reliability was .997.

In order to conduct the most powerful statistical test for object-related performance differences, a priori orthogonal contrasts were computed comparing subjects' scores in the three object conditions. An initial comparison between subjects' scores in the unfamiliar and familiar object conditions provided no evidence that object familiarity alone influenced test performance. Collapsing across examiners and age groups, mean performance in the unfamiliar object condition was 2.67; in the familiar object condition it was 3.17 ($\underline{F}$ (1,24) $<$ 1.0).

Additional analyses indicated that while older infants performed better than younger ones (Ms = 4.11 vs. 2.42, respectively; $F(1,24) = 6.87$, $p < .02$), age did not interact with the contrast between the unfamiliar and familiar object conditions, with Examiner, or with these combined variables (all F's < 1.0).

Finally, while infants tested by Examiner 1 in the unfamiliar and familiar object conditions performed significantly better than infants tested in these conditions by Examiner 2 ($F(1,24) = 9.3$, $p<.01$), Examiner did not interact with the contrast between the object conditions ($F(1,24) < 1.0$). Infants' mean test scores as a function of object familiarity and Examiner are displayed in panel a of Figure 1.

- -

Insert Figure 1 about here

- -

The motivational explanation of object-related decalage suggests infants should perform better for more highly motivating objects. In an unfamiliar testing situation an attached object was expected to provide such motivation. A second contrast between the attached object and combined unfamiliar and familiar object conditions indicated that while infants in the attached condition performed better than those in the combined unfamiliar and familiar conditions, this difference was not statistically significant (Ms = 4.00 vs. 2.92, respectively; $F(1,24) = 2.6$, $p < .12$).

Further analyses indicated that age did not interact with this second contrast or the contrast and the examiner factor (F (1, 24) = 2.23, $p < .15$ and F (1, 24) < 1.0, respectively). However, a significant interaction did occur between the contrast and Examiner (F (1,24) = 17.0, $p < .001$). This interaction is shown in panel b of Figure 1. Post hoc Scheffe multiple comparisons indicated that for Examiner 1 infants' test scores in the attached object condition did not differ significantly from the combined unfamiliar and familiar object conditions ($F_{.05: crit.}$ =12.7; $F_{obser.}$ = 3.0). However, for Examiner 2 infants in the attached object condition performed significantly better than infants in the combined unfamiliar and familiar conditions ($F_{.05:crit.}$ = 12.7; $F_{obser.}$ = 17.1). Thus, whether or not infants performed better for the attached object, in comparison to the combined unfamiliar and familiar objects, depended on which examiner administered the object permanence test.

It seems unlikely that examiner expectancies accounted for the observed Examiner by Object interaction. Examiner 2 was a research assistant unfamiliar with the object permanence literature or the experimental hypotheses. During training she was instructed that it was standard procedure to vary test objects. Furthermore, her post-experimental comments indicated that she did not suspect that objects represented a variable of interest. The potential for expectancy effects was greater for Examiner 1,

a principal investigator. However, such an explanation of the results would make it necessary to posit a "boomerang" effect whereby the examiner who was aware of the potential for object-related performance differences eliminated all such differences.

Taken together, the experimental findings seem best explained by a motivational interpretation of object-related performance differences. If the behavior of one examiner, as compared to the other, were to increase feelings of uneasiness among the subjects, two things would be expected: First, when employing unattached objects, infants tested by the "higher-stress" examiner would likely perform less well than infants tested by the "lower-stress" examiner. This is because under conditions of greater stress infants would be more likely to become irritable and untestable. On the other hand, when using an attached object, infants tested by the higher-stress examiner (as compared to the lower-stress examiner) should be more motivated to seek out the attached object and therefore perform better on the test. This was precisely the pattern of results that obtained and is displayed in Figure 1.

The experimental results raise several important issues. First, they illustrate that in addition to holding hiding procedures constant, it is necessary to separate experiential familiarity from motivational factors when interpreting object-related performance differences on an object permanence test. More generally, great care must be taken in making intra- and

inter-experimental comparisons of object permanence scores. The sensitivity of the test to multiple factors other than object concept development means that differences in test performance are uninterpretable unless testing conditions and object types are very carefully controlled. Finally, the research poses the question as to the dimensions along which inanimate objects vary phenomenologically for infants. Even though western world portrayals of infants typically picture them clasping a teddy bear or some other inanimate attached object, the role such objects play in normal development has received little attention.

References

Bell, S. M. The development of the concept of object as related to infant-mother attachment. Child Development, 1970, 41, 291-311.

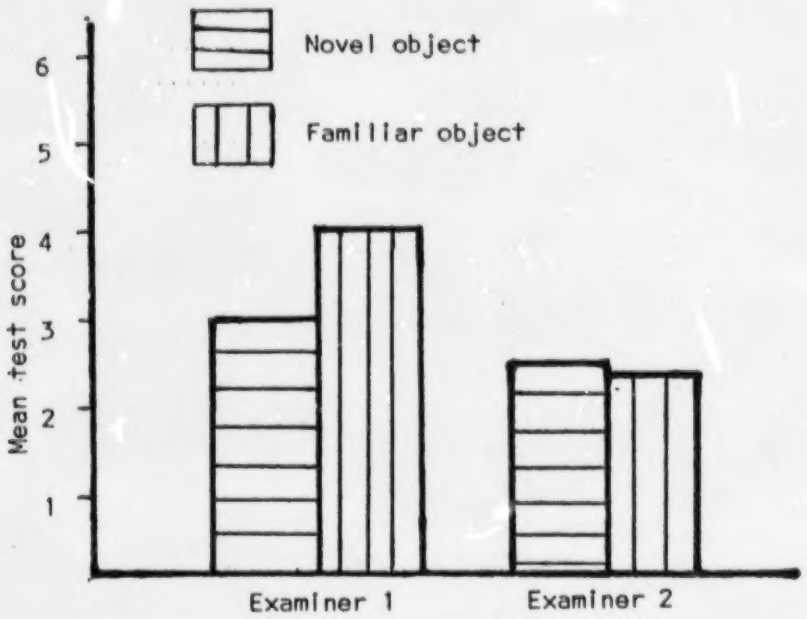
Lamb, M. E. The effects of maternal deprivation on the development of the concepts of object and person. Journal of Behavioral Science, 1973, 4, 355-364.

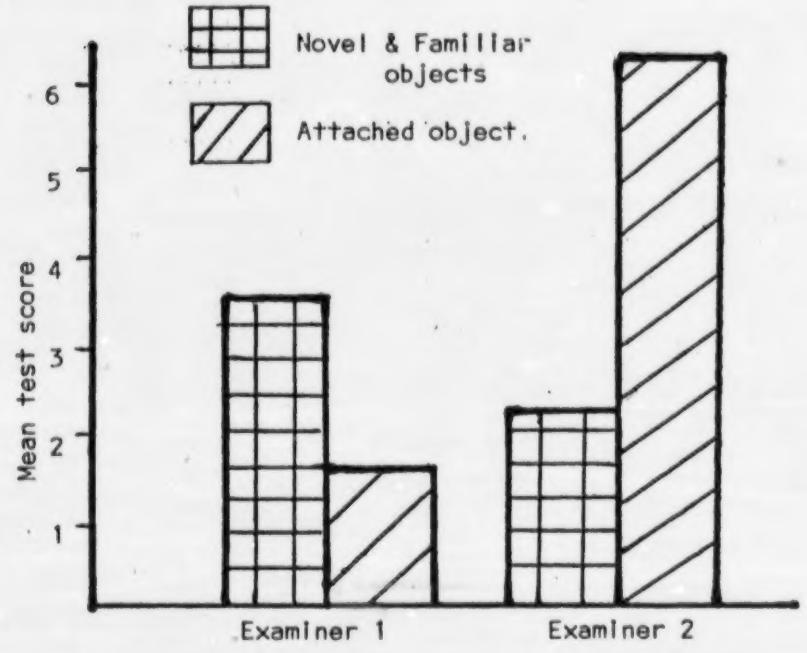
Jackson, E., Campos, J. . & Fischer, K. The question of decalage between object permanence and person permanence. Developmental Psychology, 1978, 14, 1-10.

Uzgiris, I. C., & Hunt, J. M. Assessment in Infancy. Chicago: University of Illinois Press, 1974.

Figure Caption

Figure 1. Mean object permanence scores for Examiners 1 and 2 as a function of whether a novel, familiar, or attached test object was employed in testing.


Novel object
Familiar object
Mean test score
6
5
4
3
2
1
Examiner 1
Examiner 2


Novel & Familiar objects
Attached object.
Mean test score
6
5
4
3
2
1
Examiner 1
Examiner 2